FUSE, ALARM AND DISTRIBUTION PANEL (FADP), 628492

GENERAL DESCRIPTION

CONTENTS PAGE

1. GENERAL 1
2. DESCRIPTION 1
3. FUNCTIONAL OPERATION (FIG. 2) 2
– 48V BATTERY, TALK BATTERY, AND – 48 ABS DISTRIBUTION (FIG. 2, SHEET 1) 2
ALARM CIRCUITS (FIG. 2, SHEET 2) 2
RINGING CIRCUITS (FIG. 2, SHEET 3) 2
4. OPTIONS 2
5. SPECIAL RESTRICTIONS 2
6. TEST AND MAINTENANCE FEATURES 2
7. TECHNICAL SUMMARY 6
8. REPLACEABLE PARTS 6
9. REFERENCES 6

1. GENERAL

1.01 This Section provides a general description of the ITT D448 fuse, alarm and distribution panel (FADP), 628492 (Fig. 1), to the functional block diagram level.

1.02 Whenever this Section is reissued, the reasons for reissue will be listed in this paragraph.

FRONT VIEW

REAR VIEW

Fig. 1—FADP, 628492

1.03 When equipped with the alarm and ballast unit (ABU), the FADP performs the following functions:

(a) Distributes – 48V battery, – 48V talk battery, and – 48V alarm battery supply (– 48 ABS) to up to eight D448 multiplex terminals;

(b) Distributes protected 20-Hz negative superimposed ringing to up to five D448 multiplex terminals, on a per-digroup basis (if required);

(c) Monitors the battery and ringing distribution circuits for fuse alarm conditions, and provides connections for fuse alarm and terminal alarm multiples;

(d) Provides termination tie points for connecting the high frequency (HF) transmit and receive pairs between the multiplex terminals and the span termination equipment. HF signals from up to five multiplex terminals can be connected at these tie points; and

(e) Provides termination tie points for connecting audible, visual, electronic switching system (ESS), and E2 alarm signals from each of the multiplex terminals to the office.

2. DESCRIPTION

2.01 The FADP mounts in a 19-inch wide relay rack, either as part of an ITT prewired bay (600274-800, 600275-800, or 600276-800) or as an addition in a customer-configured bay. Installation procedures for the unit are provided in Section ITTR-18-491.

2.02 The FADP is available in Group -0 only. The ABU is also available in Group -0 only.

2.03 Cartridge-type fuse, F14, and GMT-type fuses, F1 through F13, are mounted on the front panel of the FADP. The current rating of each GMT-type fuse is identified by a color dot located at the bottom of each fuseholder (Table A). A mounting space for the ABU is provided in the front panel of the FADP.

2.04 Terminal blocks TB1 through TB4 are mounted on the rear panel of the FADP. Terminal blocks TB1 and TB2 consist of six rows of wire-wrap pins; each row containing ten pins. The rows are designated A through F

from top to bottom; the pins are numbered 1 through 10 from left to right. Terminal block TB3 consists of 15 screw terminals; the screw terminals are numbered 1 through 15 from left to right. Terminal block TB4 consists of four screw terminals, the right-side screw terminals are numbered 1 and 2 from top to bottom, the left-side screw terminals are numbered 3 and 4 from top to bottom.

2.05 The ABU, 628492-025, is a plug-in printed circuit board (PCB) which provides mounting space and associated printed wiring for the alarm circuit components, red ALARM indicator, and ringing ballast thermistors. When the unit is installed in the FADP, the alarm indicator appears as part of the front panel display. Printed circuit wiring is etched on both sides of the PCB. These contacts mate with a 36-contact edge connector, J1, located on the connector bracket within the FADP.

TABLE A

FUSE RATING	COLOR CODE
1A	Gray
1-1/3A	White
3A	Blue
5A	Green

3. FUNCTIONAL OPERATION (FIG. 2)

–48V BATTERY, TALK BATTERY, AND –48 ABS DISTRIBUTION CIRCUITS (FIG. 2, SHEET 1)

3.01 The FADP receives –48V battery from the office power board, or equivalent source, via TB4-1 (BAT) and TB4-2 (GND). The main –48V source is divided into 11 separately fused distribution lines and is connected to terminal board TB3 for distribution within the bay.

3.02 Each distribution line is connected through a dedicated terminal on TB3 to a specific load. Terminals TB3-1 through TB3-10 are –48V-battery distribution terminals for multiplex terminals 1 through 5. Terminal TB3-11 is the –48 ABS distribution terminal for all multiplex terminals and any other equipment provided in the bay.

ALARM CIRCUITS (FIG. 2, SHEET 2)

3.03 The alarm circuits monitor three alarms: –48V fuse alarms, 20-Hz fuse alarms, and bank (CGA) alarms. Any of these alarm conditions turn on ALARM lamp (DS1) and close a dry loop to the office and E2 alarms.

3.04 When a multiplex terminal alarm occurs, a CGA ground signal, sent to the FADP via TB2-C10, energizes bank alarm relay K1. As K1 energizes, K1 contacts apply ground to and turn on DS1. Other K1 contacts present a dry loop closure to the office and E2 alarms.

3.05 Fuse alarm relay K2 monitors –48V fuse alarms. Fuses F1 through F13 provide –48V (–48V fuse ALM signal) to energize relay K2 when one or more of the fuses opens. When K2 energizes, contacts of K2 close to turn on DS1 and present a dry loop closure to the office and E2 alarms.

3.06 The ringing alarm detector monitors the condition of 20-Hz fuse F13. When F13 opens, 20 Hz is placed on the 20-Hz fuse alarm bus. The 20-Hz alarm detector, consisting of CR3 and C1, converts the 20-Hz signal to a dc voltage which is used to energize ringing alarm relay K3. Energizing K3 applies –48 ABS voltage through contacts of K3 to energize fuse alarm relay K2. As K2 energizes, K2 contacts turn on DS1 and forward a dry loop closure to the office and E2 alarms.

RINGING CIRCUITS (FIG. 2, SHEET 3)

3.07 The FADP receives 20-Hz negative superimposed ringing from the office ringing supply via TB3-14 (20 Hz) and TB3-15 (ringing ground). The ringing signal is applied through 20-Hz fuse F13 and ballast thermistors RT1 through RT10 to terminal block TB2 for distribution to multiplex terminals 1 through 5. One ballast thermistor in each of the distribution circuits (one per digroup) prevents overloading of the office ringing supply if a short circuit develops in any of the output circuits.

4. OPTIONS

4.01 This unit has no field-selectable options.

5. SPECIAL RESTRICTIONS

5.01 The maximum input current rating of the FADP is 30A. The total of *all* fuses used in the FADP must not exceed this value.

5.02 To avoid ground loops and attendant noise problems, the shield of a shielded cable should be connected at one end only. The choice of which shield end to leave "floating" should be made according to local company installation practices.

6. TEST AND MAINTENANCE FEATURES

6.01 Table B provides a functional description of the FADP test and maintenance features. Fig. 1 shows the physical location of each test and maintenance feature.

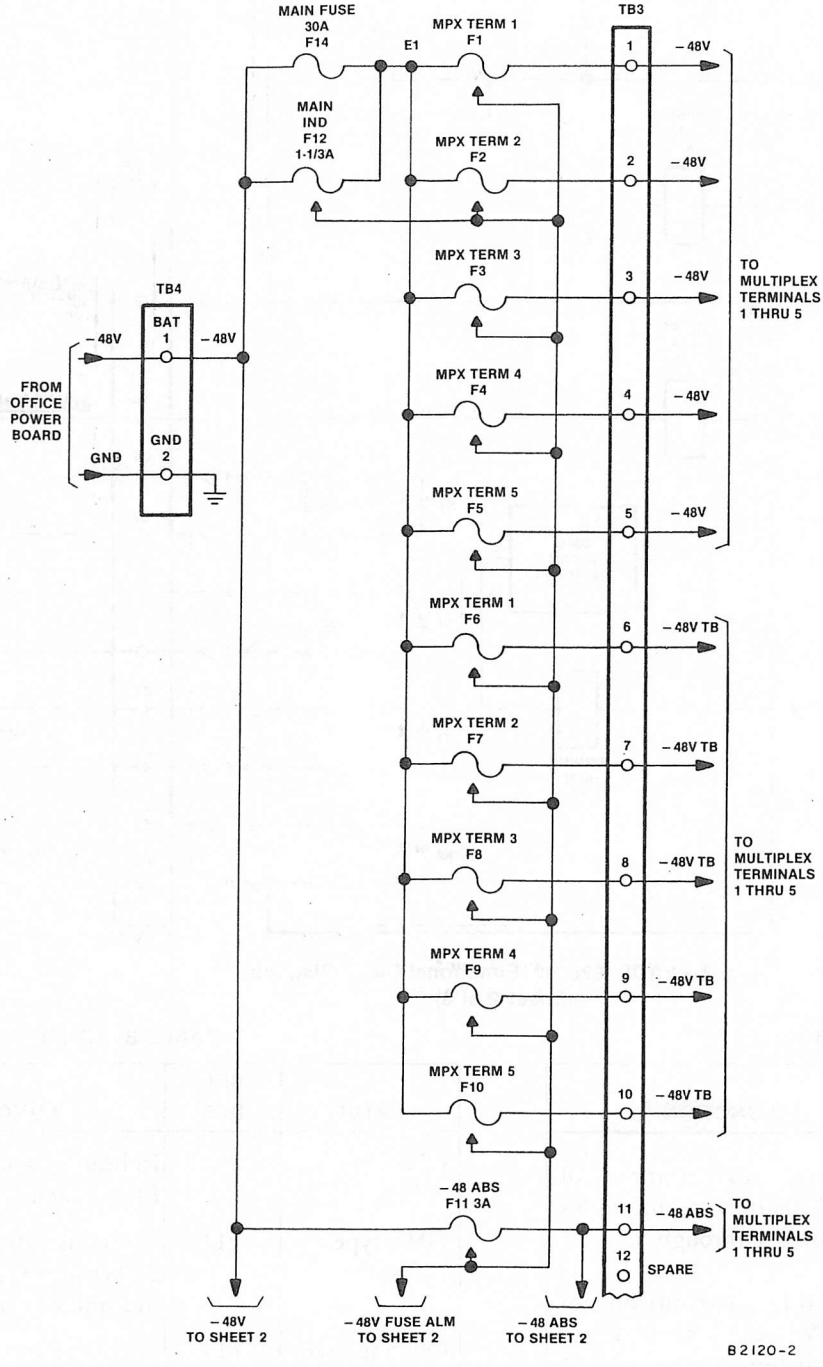

Fig. 2—FADP, 628492, Functional Block Diagram
(Sheet 1 of 3)

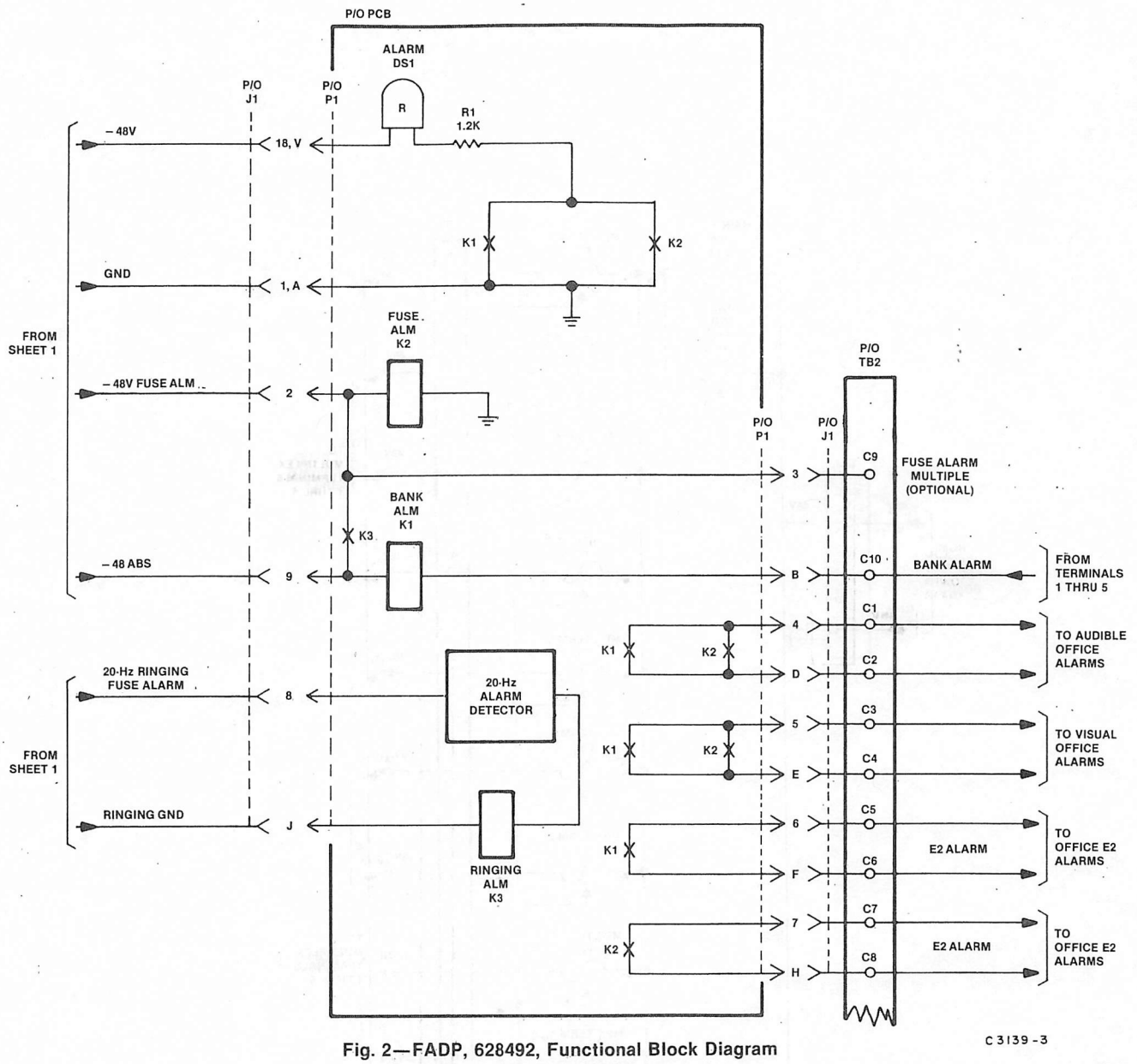

Fig. 2—FADP, 628492, Functional Block Diagram (Sheet 2 of 3)

TABLE B

FEATURE	REF. DES.	FUNCTION
GMT-type fuses	F1 through F5	Control distribution of –48V battery to multiplex terminals 1 through 5.
GMt-type fuses	F6 through F10	Control distribution of –48V talk battery to multiplex terminals 1 through 5.
GMT-type fuse	F11	Controls distribution of –48V ABS throughout bay.

TABLE B (CONT)

FEATURE	REF. DES.	FUNCTION
GMT-type fuse	F12	Indicates when main fuse F14 is open.
GMT-type fuse	F13	Controls distribution of 20-Hz protected ringing to multiplex terminals.
Cartridge-type fuse	F14	30A fuse controlling distribution of –48V input battery.
ALARM lamp	DS1	Turns on when any fuse alarm condition exists.

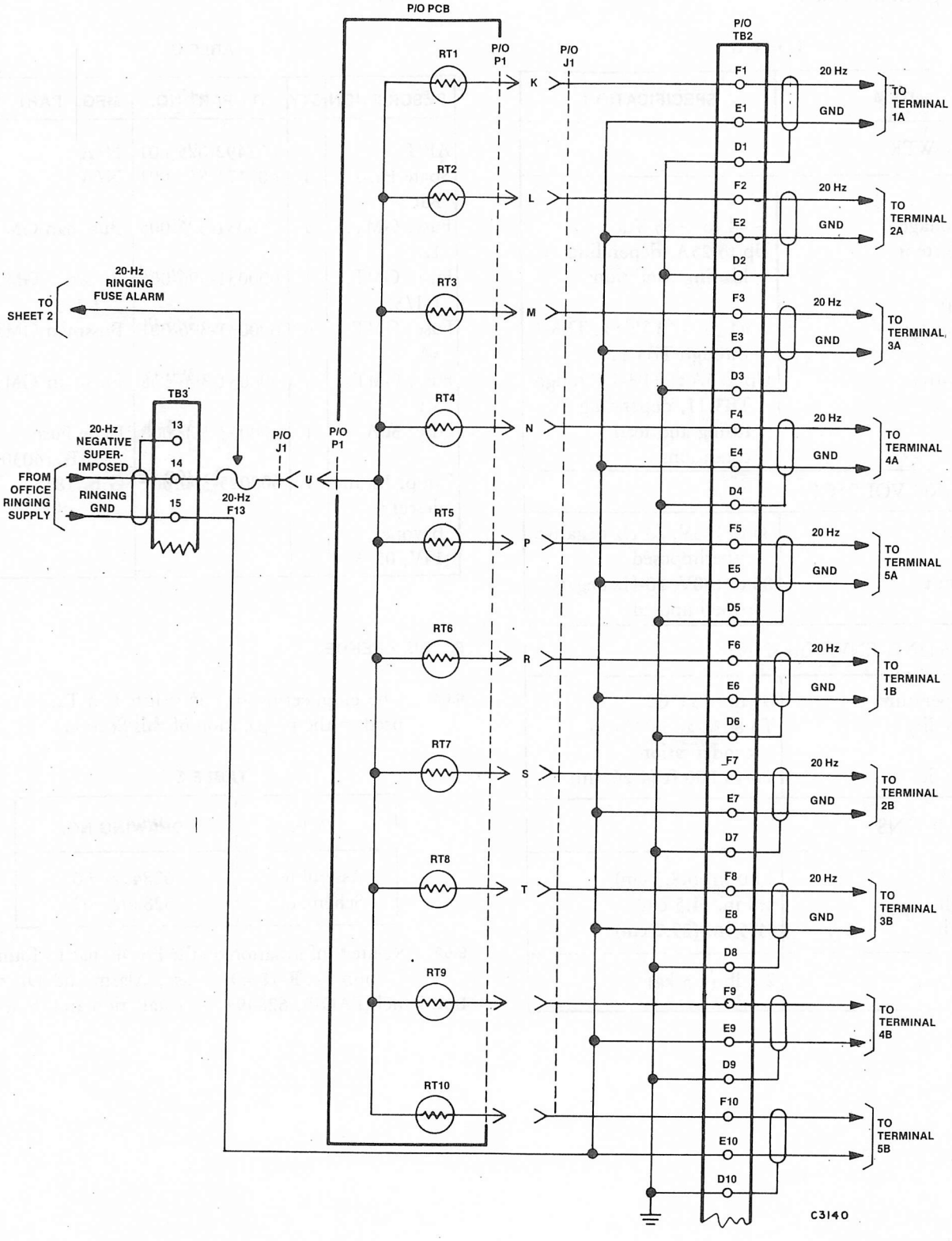

Fig. 2—FADP, 628492, Functional Block Diagram (Sheet 3 of 3)

7. TECHNICAL SUMMARY

7.01 A summary of technical specifications for the unit is given in Table C.

TABLE C

ITEM	SPECIFICATION
DC POWER	
Input	
Voltage	−44 to −56 Vdc
Current	Up to 25A, depending on loading conditions
Output	
Voltage	−44 to −56 Vdc at TB3-1 through TB3-11
Current	Up to 5A at TB3-1 through TB3-11, depending on fusing and load conditions
RINGING VOLTAGE	
Input	85 to 130V, 20-Hz negative superimposed
Output	85 to 130V, 20-Hz negative superimposed
OPERATING ENVIRONMENT	
Temperature	0° to +55°C
Humidity	To 80% at 38°C (no condensation)
Altitude	To 14,000 ft (4,267 m)
DIMENSIONS	
Width	19.0 in. (48.3 cm)
Height	1.8 in. (4.5 cm)
Depth	11.5 in. (29.2 cm)
WEIGHT	2.8 lb (1.3 kg)

8. REPLACEABLE PARTS

8.01 Field-replaceable parts for the FADP are listed in Table D.

TABLE D

DESCRIPTION	QTY	ITT PART NO.	MFG. PART NO.
ABU	1	628492-025-001	N/A
Spare Parts Kit	1	600171-817-001	N/A
Fuse, GMT, 1A	1	600031-396-005	Bussman GMT 1
Fuse, GMT, 1-1/3A	1	600031-396-006	Bussman GMT 1-1/3
Fuse, GMT, 3A	6	600031-396-001	Bussman GMT 3
Fuse, GMT, 5A	5	600031-396-008	Bussman GMT 5
Fuse, 30A	1	600053-396-008	Little Fuse 5AB514030
Lamp, Incandescent, Bayonet, 14V, 02.A	1	600025-390-001	G.E. 1815

9. REFERENCES

9.01 The engineering drawings listed in Table E were used in the preparation of this Section.

TABLE E

TYPE	DRAWING NO.
Assembly	628492-000
Schematic	628492-002

9.02 Related information on the FADP may be found in Section ITTR-18-491, Fuse, Alarm and Distribution Panel (FADP), 628492 — Installation and Pretest.